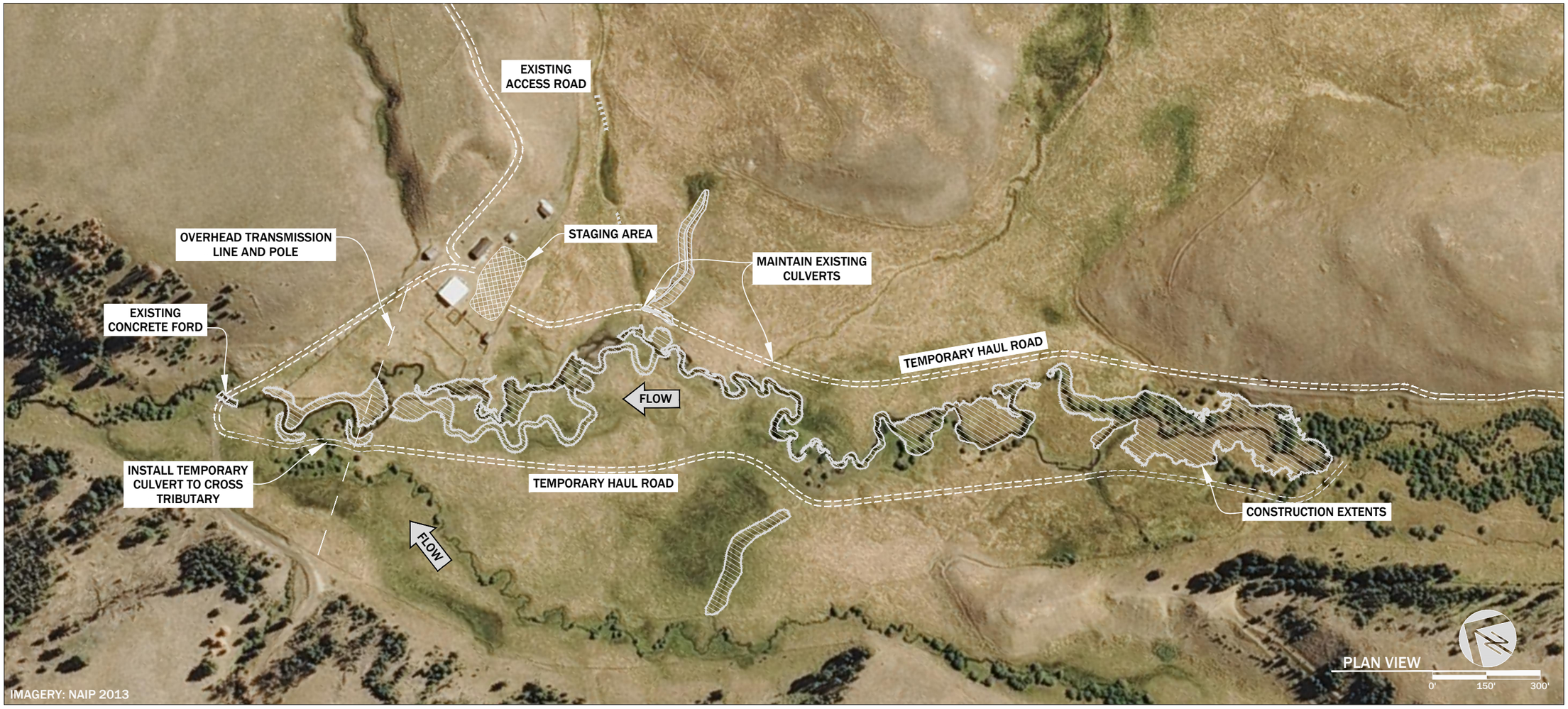


DIRECTIONS TO PROJECT SITE

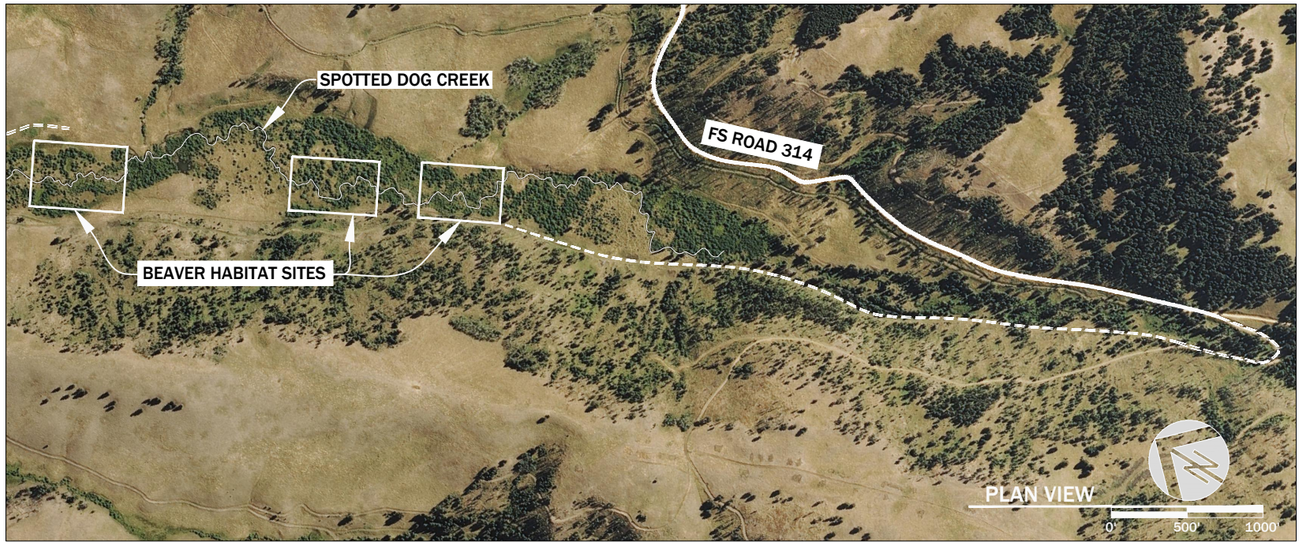
FROM U.S. HIGHWAY 12 IN ELLISTON TURN SOUTH ON ELLISTON GULCH ROAD. AFTER 1.3 MILES, TURN RIGHT ONTO FOREST SERVICE ROAD 314. CONTINUE FOR APPROXIMATELY 12 MILES UNTIL CRESTING A RIDGE (INTERSECTION WITH ALTERNATE ROUTE). CONTINUE FOR APPROXIMATELY 0.8 MILES AND TURN RIGHT ONTO AN UNNAMED ROAD. CONTINUE 0.6 MILES TO A GATE. TURN LEFT DOWN THE STEEP HILL 0.5 MILES TO THE PROJECT SITE.

ALTERNATIVE ROUTE TO PROJECT SITE FOR FOUR-WHEEL DRIVE VEHICLES

FROM THE INTERSECTION OF MT 141 AND U.S. HIGHWAY 12 IN AVON, TURN SOUTH ONTO SPOTTED DOG CANYON ROAD AND CROSS THE LITTLE BLACKFOOT RIVER. CONTINUE FOR 0.5 MILES AND BEAR LEFT AT THE INTERSECTION ONTO TROUT CREEK ROAD. CONTINUE FOR 1.7 MILES AND TURN RIGHT SHARPLY ONTO AN UNNAMED ROAD. CONTINUE FOR 4.7 MILES ALONG AN OPEN RIDGE TO THE INTERSECTION WITH FOREST SERVICE ROAD 314. CONTINUE ON FOREST ROAD 314 FOR APPROXIMATELY 0.8 MILES AND TURN RIGHT ONTO AN UNNAMED ROAD. CONTINUE 0.6 MILES TO A GATE. TURN LEFT DOWN THE STEEP HILL 0.5 MILES TO THE PROJECT SITE.

DIRECTIONS TO BEAVER HABITAT SITES

FROM U.S. HIGHWAY 12 IN ELLISTON TURN SOUTH ON ELLISTON GULCH ROAD. AFTER 1.3 MILES, TURN RIGHT ONTO FOREST SERVICE ROAD 314. CONTINUE FOR APPROXIMATELY 12 MILES UNTIL CRESTING A RIDGE (INTERSECTION WITH ALTERNATE ROUTE). CONTINUE FOR APPROXIMATELY 4.1 MILES TILL YOU MEET A FORK IN THE ROAD. STAY RIGHT AT A FORK ONTO AN UNNAMED ROAD. CONTINUE 0.2 MILES, CROSSING SPOTTED DOG CREEK, AND TURN RIGHT ONTO ANOTHER UNNAMED ROAD. CONTINUE APPROXIMATELY 0.8 MILES TO THE FIRST BEAVER HABITAT PROJECT SITE.



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ACCESS, STAGING AND UTILITIES

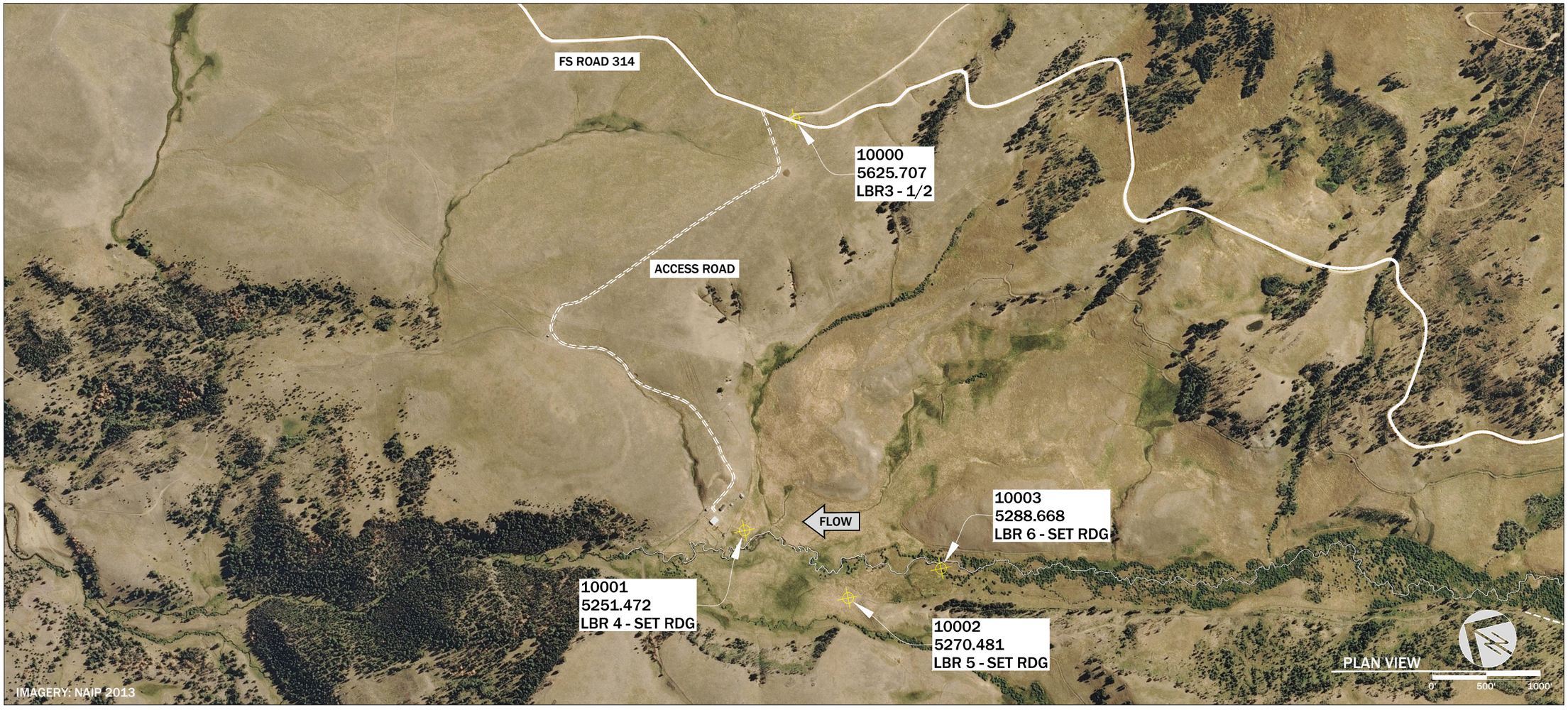
UPPER SPOTTED DOG CREEK
NEAR AVON, MONTANA

NO.	DATE	BY	DESCRIPTION	CHK
1	3-11-16	NW	DESIGN	MD
2	1-02-20	NW	DESIGN REVISIONS	MD

PROJECT NUMBER
RDG-15-053

SHEET NUMBER

4.0



PROJECT DATUM

THE PROJECT COORDINATES ARE BASED ON THE FOLLOWING:	
HORIZONTAL PROJECTION:	UTM ZONE 11 NORTH
HORIZONTAL DATUM:	NAD83 CORS 2011
UNITS:	US SURVEY FEET
VERTICAL DATUM:	NAVD88 (GEOID 12A)

CONTROL POINTS

POINT NUMBER	EASTING	NORTHING	LONGITUDE	LATITUDE	POINT ELEVATION	RAW DESCRIPTION
10000	1202421.2350'	838107.7210'	W112°32' 41.31"	N046°30' 28.81"	5625.707'	5/8" REBAR WITH A 2" ALUMINUM CAP MARKED "RDG"
10001	1198977.5480'	836375.3230'	W112°33' 29.56"	N046°30' 10.39"	5251.472'	5/8" REBAR WITH A 2" ALUMINUM CAP MARKED "RDG"
10002	1198987.0600'	835226.5290'	W112°33' 28.79"	N046°29' 59.06"	5270.481'	5/8" REBAR WITH A 2" ALUMINUM CAP MARKED "RDG"
10003	1199692.2540'	834657.8650'	W112°33' 18.39"	N046°29' 53.72"	5288.668'	5/8" REBAR WITH A 2" ALUMINUM CAP MARKED "RDG"

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SURVEY CONTROL SHEET

UPPER SPOTTED DOG CREEK

NEAR AVON, MONTANA

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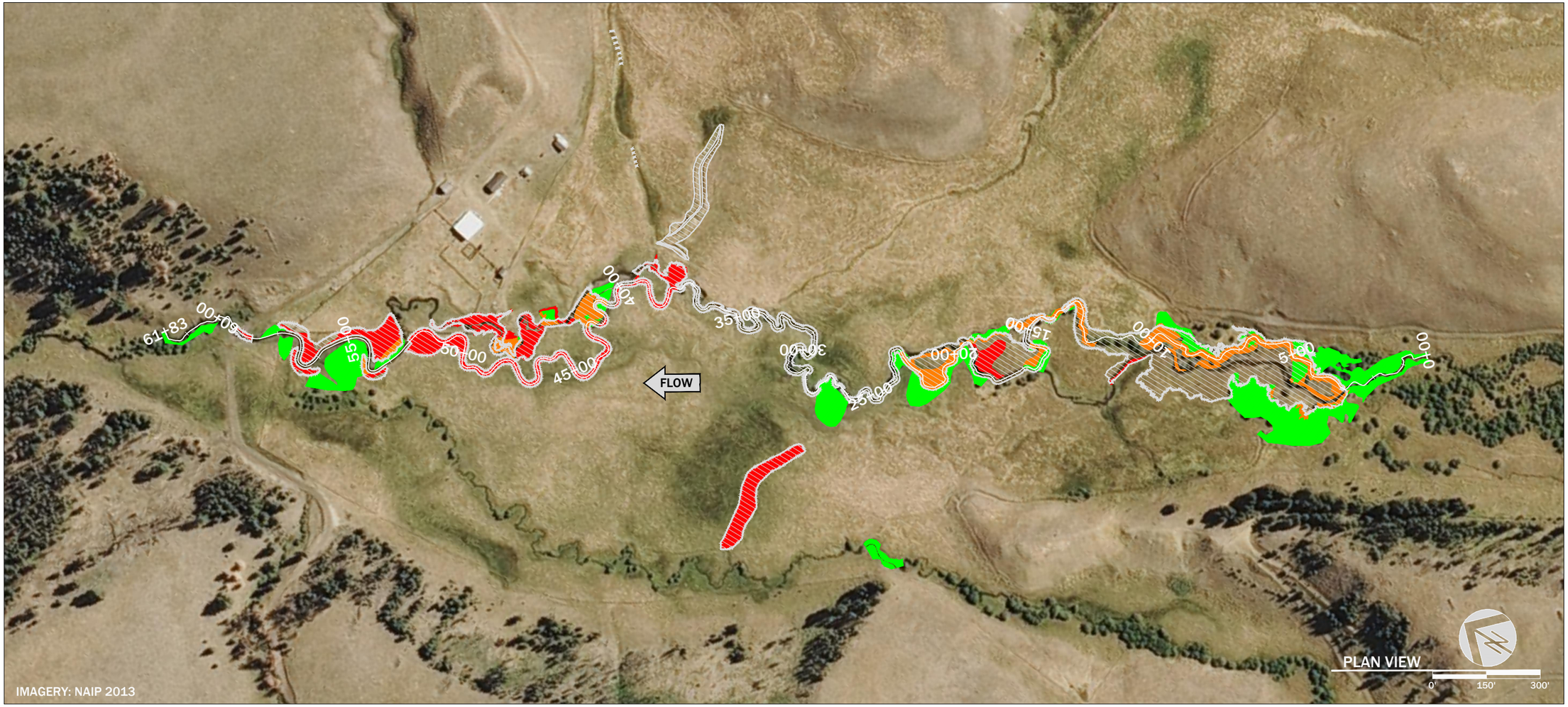
RDG-15-053

SHEET NUMBER

4.1



VEGETATION PRESERVATION AND SALVAGE NOTES:

1. SEVERAL WETLAND AREAS SUPPORTING DESIRABLE VEGETATION ARE PRESENT NEAR FLOODPLAIN GRADING AND CHANNEL CONSTRUCTION LIMITS. DISTURBANCE OF THESE AREAS SHOULD BE AVOIDED DURING CONSTRUCTION ACTIVITIES.
2. MATURE SHRUBS AND HERBACEOUS SOD LOCATED WITHIN FLOODPLAIN GRADING LIMITS SHOULD BE SALVAGED AND TRANSPLANTED TO THE EXTENT FEASIBLE. THE CONSTRUCTION SEQUENCING SHOULD TAKE INTO CONSIDERATION THE PRESERVATION AND SALVAGE AREAS SHOWN ON THIS SHEET. EXACT LOCATIONS OF VEGETATION TO SALVAGE AND TRANSPLANT LOCATIONS SHALL BE STAKED BY THE ENGINEER PRIOR TO CONSTRUCTION.
3. SHRUBS SHOULD BE HARVESTED IN A MANNER THAT ENSURES THE ROOTBALL REMAINS INTACT. SHRUBS SELECTED FOR SALVAGE AND TRANSPLANT SHOULD BE YOUNG, VIGOROUS, AND RELATIVELY SMALL IN SIZE (6 TO 12 FEET TALL). LARGER SHRUBS WITHIN FLOODPLAIN GRADING LIMITS SHOULD BE STOCKPILED WITH OTHER WOODY DEBRIS FOR USE IN FLOODPLAIN ROUGHNESS AND STREAMBANK TREATMENTS. WITHIN GRADING LIMITS, THERE ARE NUMEROUS WILLOWS THAT ARE THE APPROPRIATE SIZE FOR SALVAGE AND TRANSPLANT.
4. HERBACEOUS SOD SHOULD BE HARVESTED TO A DEPTH OF 8-12 INCHES. IF SALVAGED SOD CANNOT BE DIRECTLY PLACED ONTO TRANSPLANT SITES, SOD SHOULD BE STAGED IN SHALLOW (LESS THAN 3 INCHES) WATER UNTIL PLACEMENT. TRANSPLANT LOCATIONS SHOULD BE EXCAVATED TO A DEPTH OF 6 INCHES PRIOR TO PLACING SOD MATS. SOD MATS SHOULD BE PLACED TIGHTLY TOGETHER TO AVOID DRYING OF SOIL AND VEGETATION. EDGES OF SOD MATS SHOULD BE BACKFILLED WITH CLEAN SOIL TO ENSURE SMOOTH TRANSITIONS TO SURROUNDING SURFACES AND PREVENT DRYING OF SOIL AND VEGETATION. HERBACEOUS SOD MATS WILL BE PLACED IN STREAMBANK TREATMENTS, IN OFF CHANNEL WETLAND FEATURES, AND IN AREAS OF FLOODPLAIN GRADING AS DIRECTED BY THE ENGINEER.

LEGEND

- PRESERVATION (SHRUB WETLAND OUTSIDE GRADING)
- PRESERVATION OR SALVAGE (SHRUB WETLAND WITHIN GRADING)
- SALVAGE (WILLOW AND SHRUB FROM EMERGENT WETLAND WITHIN GRADING)
- FLOODPLAIN GRADING AREA

VEGETATION PRESERVATION AND SALVAGE

UPPER SPOTTED DOG CREEK
NEAR AVON, MONTANA

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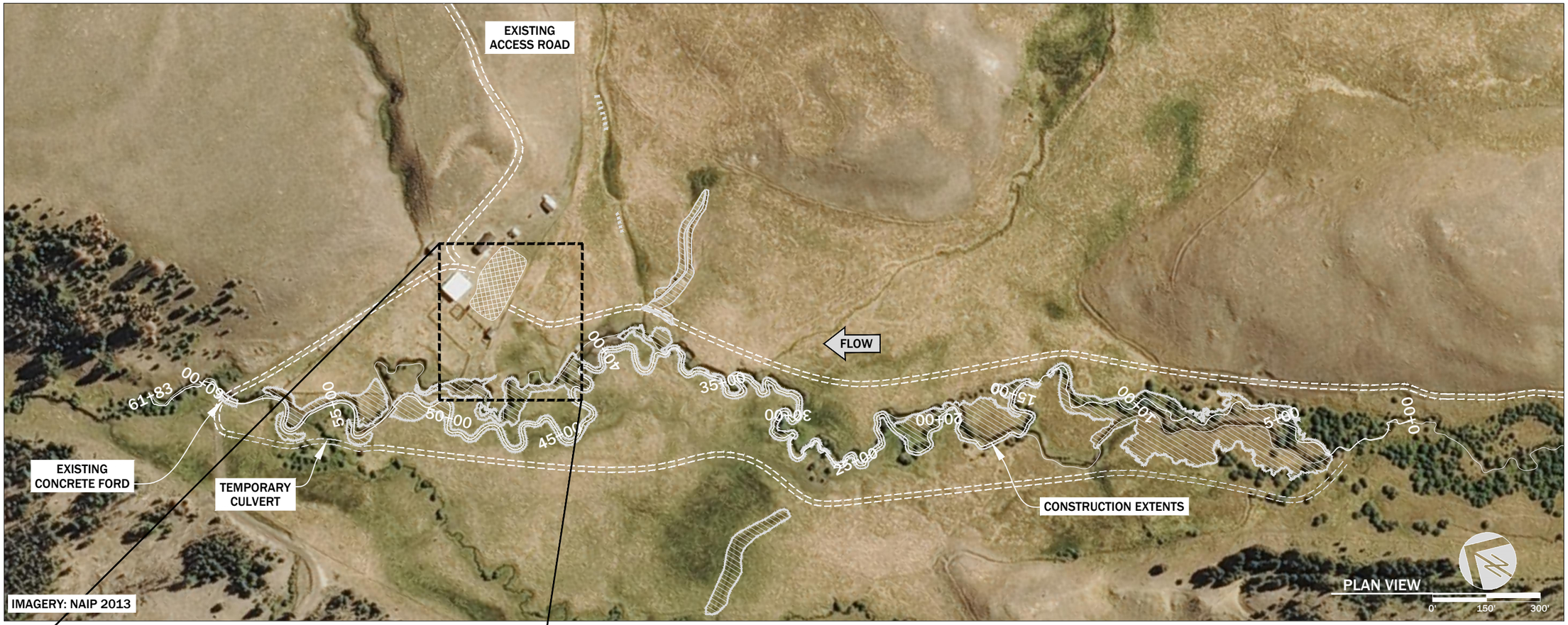
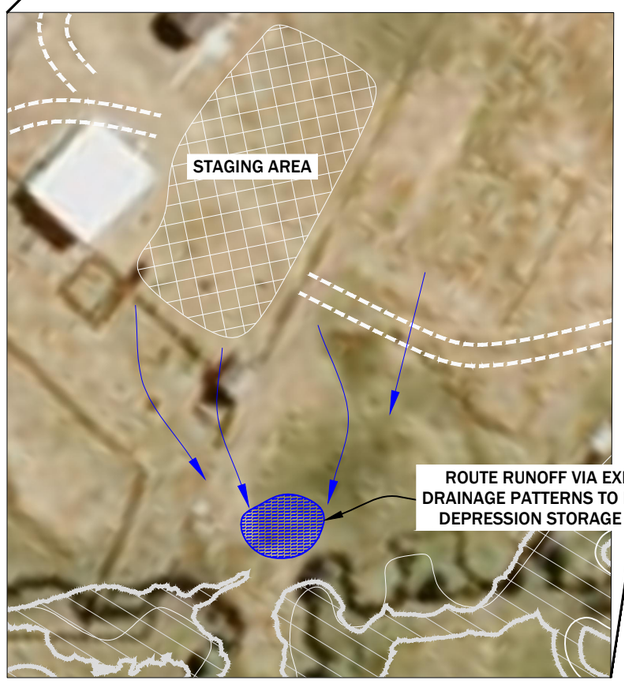
RDG-15-053

SHEET NUMBER
4.2





NOTE: STORMWATER AND EROSION CONTROL WILL BE MANAGED USING EXISTING DRAINAGE PATTERNS AND ON-SITE STORAGE AREAS. EXISTING DRAINAGE PATTERNS WILL BE MAINTAINED AND RUNOFF WILL BE ROUTED INTO NATURAL DEPRESSIONS IN THE EXISTING TOPOGRAPHY OR CONSTRUCTED DITCHES AT THE TOE OF CONSTRUCTED SLOPES. STORMWATER AND EROSION CONTROL PRACTICES WILL BE MONITORED FOR EFFECTIVENESS TO DETERMINE IF ADDITIONAL CONTROL MEASURES ARE WARRANTED. ADDITIONAL CONTROL MEASURES MAY INCLUDE USE OF STRAW BALES, COIR WATTLES OR OTHER BMPS EFFECTIVE AT MINIMIZING SURFACE EROSION AND DELIVERY OF SEDIMENT TO WATER BODIES. WHERE WETLANDS INTERSECT THE PROJECT BOUNDARY OR ARE IN THE PATH OF STORMWATER OR RUNOFF PRODUCED BY THE PROJECT, SILT FENCE SHALL BE INSTALLED ALONG THE EDGE OF THE WETLAND AND WATER MUST BE ROUTED SO THERE IS NO DIRECT SEDIMENT DELIVERY TO THE WETLAND.

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STORMWATER AND EROSION CONTROL

UPPER SPOTTED DOG CREEK NEAR AVON, MONTANA

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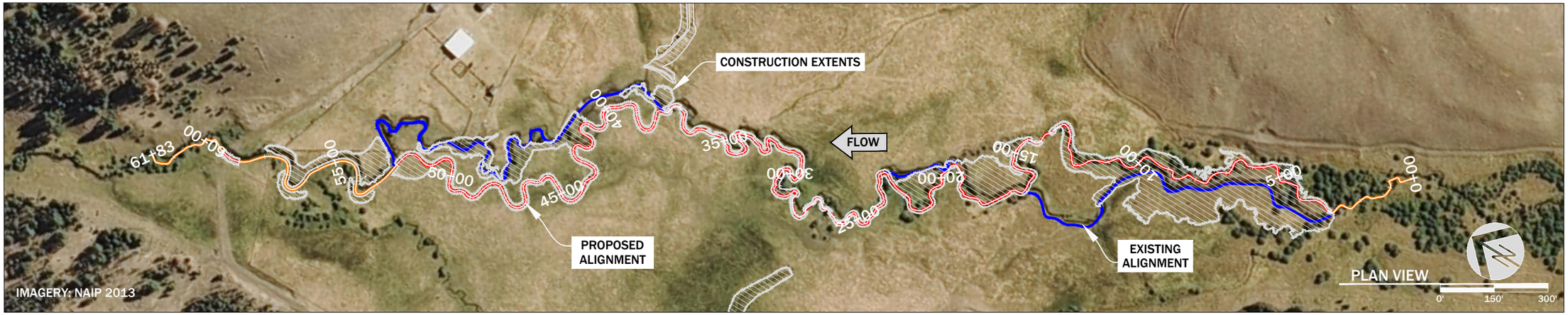
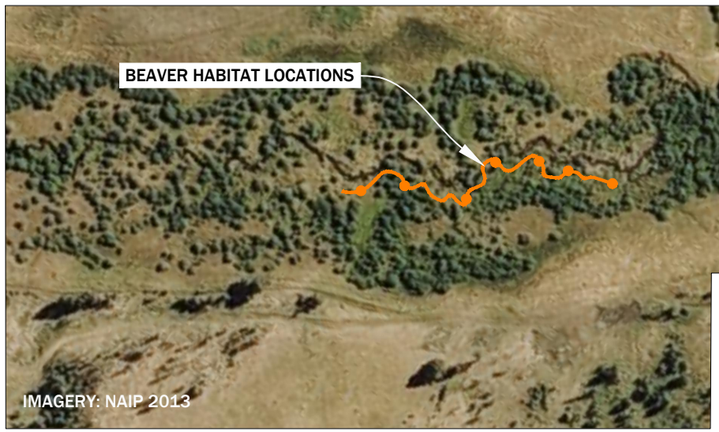
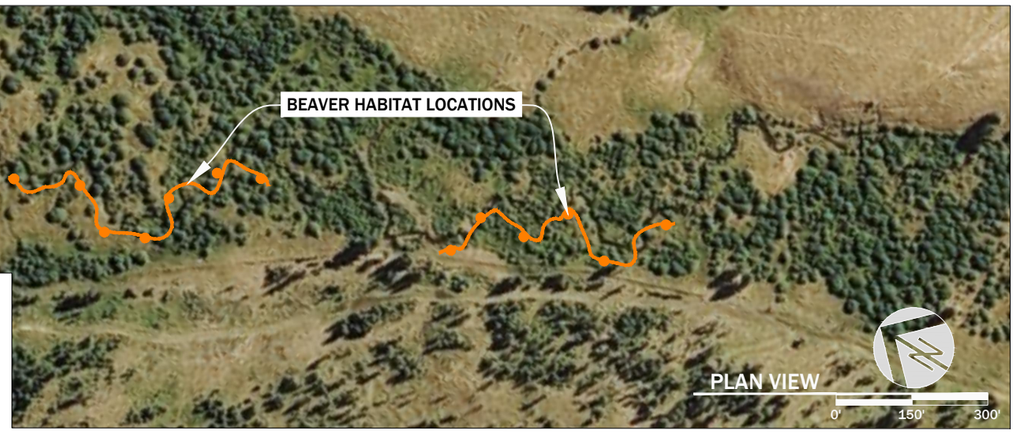
PROJECT NUMBER
RDG-15-053

SHEET NUMBER

4.3







LEGEND

- FISH SALVAGE MAY BE REQUIRED
- WORK IN FLOWING CONDITIONS
- NEW CHANNEL CONSTRUCTION (WORKING IN DRY CONDITIONS)

FLOW CONDITIONS DURING IN-WATER WORK WINDOW

THE PROJECT WILL BE IMPLEMENTED DURING THE IN-STREAM WORK WINDOW IDENTIFIED BY THE U.S. FISH AND WILDLIFE SERVICE AND MONTANA FISH, WILDLIFE AND PARKS DURING THE CONSULTATION PROCESS. IT IS EXPECTED THAT THE CONSTRUCTION WINDOW WILL BE DURING THE LOWEST SEASONAL FLOWS BETWEEN JULY AND OCTOBER. MEAN DAILY FLOW CONDITIONS ARE EXPECTED TO BE 5 TO 10 CFS IN MID JULY, DROPPING TO LESS THAN 5 CFS BY SEPTEMBER. MULTIPLE WATER MANAGEMENT STRATEGIES WILL BE REQUIRED TO ADDRESS THE RANGE OF WORK CONDITIONS ENCOUNTERED. ANTICIPATED WATER MANAGEMENT STRATEGIES ARE LISTED IN THE TABLE BELOW.

STATION	ANTICIPATED WATER MANAGEMENT STRATEGY
0+00 TO 3+00	LIMITED WORK WITHIN THE EXISTING CHANNEL. WORKING IN FLOWING CONDITIONS IS REQUIRED.
3+00 TO 16+50	WORK IS WITHIN AN ABANDONED DRY CHANNEL. GROUNDWATER SEEPAGE IS UNLIKELY; HOWEVER, USE OF PUMPS OR WORKING IN WET CONDITIONS MAY BE REQUIRED.
16+50 TO 20+00	WORK IS WITHIN THE EXISTING CHANNEL. WORKING IN FLOWING CONDITIONS IS REQUIRED.
20+00 TO 23+00	WORK IS WITHIN AN ABANDONED DRY CHANNEL. GROUNDWATER SEEPAGE IS LIKELY AND USE OF PUMPS OR WORKING IN WET CONDITIONS MAY BE REQUIRED.
23+00 TO 37+50	USE OF PUMPS MAY BE REQUIRED TO WORK WITHIN THE EXISTING CHANNEL. WORKING IN FLOWING CONDITIONS IS REQUIRED.
37+50 TO 52+00	NEW CHANNEL CONSTRUCTION THROUGH A MEADOW. GROUNDWATER SEEPAGE IS LIKELY AND USE OF PUMPS OR WORKING IN WET CONDITIONS MAY BE REQUIRED.
52+00 TO 60+00	WORK IS WITHIN THE EXISTING CHANNEL. WORKING IN FLOWING CONDITIONS IS REQUIRED.
BEAVER DAMS	WORK IS WITHIN THE EXISTING CHANNEL. WORKING IN FLOWING CONDITIONS IS REQUIRED. PUMP WATER AROUND STRUCTURE SITES.

WATER DIVERSIONS AND FISH SALVAGE OPERATIONS

NEW CHANNEL ACTIVATION WILL EMPLOY MEASURES TO MINIMIZE STRANDING OF FISH WITHIN THE OLD CHANNEL. FISH SALVAGE OPERATIONS WILL BE CONDUCTED WHEN SPOTTED DOG CREEK IS INTRODUCED INTO THE NEW CHANNEL. WATER DIVERSION SHALL OCCUR INCREMENTALLY IN ORDER TO ALLOW FISH TO EVACUATE DEWATERED AREAS. FISH SALVAGE OPERATIONS WILL BE PERFORMED WITHIN THE OLD CHANNEL, AND SHALL BE PERFORMED BY QUALIFIED BIOLOGISTS USING ELECTRO-FISHING AND SEINING EQUIPMENT. ANTICIPATED FISH SALVAGE LOCATIONS ARE LISTED IN THE TABLE BELOW.

STATION	ANTICIPATED WATER DIVERSIONS AND FISH SALVAGE OPERATIONS
0+00 TO 3+00	NO DIVERSIONS OR FISH SALVAGE.
3+00 TO 16+50	MAY BE DIVERTED UPON COMPLETION OF SEGMENT. FISH SALVAGE REQUIRED IN ABANDONED OLD CHANNEL.
16+50 TO 20+00	NO DIVERSIONS OR FISH SALVAGE.
20+00 TO 23+00	MAY BE DIVERTED UPON COMPLETION OF SEGMENT. FISH SALVAGE REQUIRED IN ABANDONED OLD CHANNEL.
23+00 TO 37+50	FISH SALVAGE REQUIRED. SCREEN PUMP INTAKE TO MINIMIZE IMPACTS TO FISH.
37+50 TO 52+00	MAY BE DIVERTED UPON COMPLETION OF SEGMENT. FISH SALVAGE REQUIRED IN ABANDONED OLD CHANNEL.
52+00 TO 60+00	NO DIVERSIONS OR FISH SALVAGE.
BEAVER DAMS	NO DIVERSIONS OR FISH SALVAGE.

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WATER MANAGEMENT PLAN

UPPER SPOTTED DOG CREEK NEAR AVON, MONTANA

NO.	DATE	BY	DESCRIPTION	CHK
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SHEET NUMBER

4.4